Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently amended) A signal compensation circuit comprising:

an amplifier receiving and amplifying an input signal to generate an amplified signal having a direct-current component and an amplitude, the amplifier having an adjustment terminal for adjusting the direct-current component of the amplified signal;

an integrating circuit including a capacitor that can be charged and discharged at a rate determined by a time constant, the capacitor thus acquiring a potential, said potential being applied to the adjustment terminal of the amplifier;

a low-speed compensation circuit for detecting changes in the direct-current component of the amplified signal and charging and discharging the capacitor in the integrating circuit in accordance with said changes, at the rate determined by the time constant of the integrating circuit;

a high-speed compensation circuit for comparing the amplified signal with an allowable amplitude range, and charging and discharging the capacitor in the integrating circuit at a rate faster than the rate determined by the time constant of the integrating circuit, when the amplitude of the amplified signal goes outside the allowable amplitude range; and

a threshold adjustment circuit for detecting changes in the amplitude of the amplified signal, and adjusting the allowable amplitude range in response to the detected changes in the amplitude.

2. (Original) The signal compensation circuit of claim 1, wherein the threshold adjustment circuit increases the allowable amplitude range so as to accommodate the amplified signal.

3. (Original) The signal compensation circuit of claim 2, wherein the threshold adjustment circuit increases the allowable amplitude range when the amplitude of the amplified signal goes outside the allowable amplitude range.

4. (Original) The signal compensation circuit of claim 3, wherein the threshold adjustment circuit sets the allowable amplitude range to an initial range and waits until the amplified signal goes outside the initial range a predetermined number of times before increasing the allowable amplitude range.

5. (Original) The signal compensation circuit of claim 1, wherein the threshold adjustment circuit comprises:

a signal level detector for comparing the amplified signal with an upper threshold potential and a lower threshold potential, the upper threshold potential and the lower threshold potential defining the allowable amplitude range;

an amplitude limitation potential generator for generating the upper threshold potential and the lower threshold potential; and

an amplitude limit controller for adjusting a potential difference between the upper threshold potential and the lower threshold potential.

6. (Currently amended) The signal compensation circuit of claim 5, wherein the amplitude limit controller waits until the amplified signal has both gone above the upper threshold potential and gone below the lower threshold limit before starting to adjust the potential difference between the upper threshold potential and the lower threshold potential.

7. (Original) A demodulating circuit comprising:

the signal compensation circuit of claim 1;

a detector receiving a modulated signal and generating a demodulated signal as the input signal of the amplifier in the signal compensation circuit; and

a comparator for comparing the amplified signal in the signal compensation circuit with a reference potential, thereby generating a digital output signal.

8. (Currently amended) A method of compensating for a direct-current offset of an input signal, ~~signal~~ comprising the steps of:

(a) amplifying the input signal by an amplifier having a variable direct-current offset, thereby obtaining an amplified signal having a direct-current component;

(b) charging and discharging a capacitor in an integrating circuit according to the direct-current component of the amplified signal, at a rate determined by a time constant of the integrating circuit;

(c) comparing the amplified signal with a pair of threshold potentials defining an allowable amplitude range;

(d) adjusting the pair of threshold potentials according to an amplitude of the amplified signal;

(e) charging and discharging said capacitor, at a rate faster than the rate determined by a time constant of the integrating circuit, when the amplified signal goes outside the allowable amplitude range; and

(f) controlling the variable direct-current offset of the amplifier according to a potential of said capacitor.

9. (Currently amended) The ~~signal compensation circuit~~ method of claim 8, wherein said step (d) includes enlarging the allowable amplitude range so as to accommodate the amplified signal.

10. (Currently amended) The ~~signal compensation circuit~~ method of claim 9, wherein said step (d) is carried out when the amplified signal goes outside the allowable amplitude range.

11. (Currently amended) The ~~signal compensation circuit~~ method of claim 10, wherein said step (d) is first carried out when the amplified signal has both gone above and gone below the allowable amplitude range.